

Customer No.: 31561
Docket No.: 21399-US-PA
Application No.: 10/826,176

To the Drawings

Please amend FIG. 1 by changing the objects being pointed by the numerals 21 and 22.

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REMARKS

Present Status of the Application

Claims 1-20 are rejected. Specifically, claims 2 and 12 are rejected under 35 U.S.C. 112, second paragraph. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pommer et al. (U. S. Pub. 2003/0201462; hereinafter Pommer). Applicants have amended claims 2, 10 and 12 to correct typographic errors. After entry of amendments, claims 1-20 remain pending in the present application, and reconsideration of those claims is respectfully requested.

About Amendments

Applicants have just amended typographic errors without adding the non-elected features.

The features of two sets of alignment keys are recited in independent claim 1 as follows:

1. An array optical subassembly for an array optical active component, comprising:

a substrate having two opposite surfaces, wherein a lens array is formed on one surface and multiple metal pads, multiple metal lines and alignment keys are formed on the other surface;

at least one optical active component deposited on the substrate, wherein the at least one optical active component has a multiple source array corresponding to the lens array of the substrate, multiple first terminals corresponding to the metal pads, and alignment keys corresponding to the alignment keys of the substrate;

a driver IC connected on the substrate, wherein the driver IC has multiple

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second terminals corresponding to the metal pads;

a circuit board connected on the substrate, wherein the circuit board has multiple third terminals corresponding to the metal pads; and

a cover covering the substrate, the at least one optical active component, the driver IC and the circuit board (*Emphasis added*).

Likewise, independent claim 10 recite two sets of alignment keys as follows:

10. An array optical assembly comprising:

an array optical subassembly unit having:

a substrate having two opposite surfaces, wherein a lens array is formed on one surface and multiple metal pads, multiple metal lines and alignment keys are formed on the other surface;

at least one optical active component assembled on the substrate, wherein the at least one optical active component has a multiple source array corresponding to the lens array of the substrate, multiple first terminals corresponding to the metal pads, and alignment keys corresponding to the alignment keys of the substrate;

a driver IC connected on the substrate, wherein the driver IC has multiple second terminals corresponding to the metal pads;

a circuit board connected on the substrate, wherein the circuit board has multiple third terminals corresponding to the metal pads; and

a cover covering the substrate, the at least one optical active component, the driver IC and the circuit board; and

a base connected between the cover of the array optical assembly and the circuit board; and a main circuit board electronically connected to the circuit board (*Emphasis added*).

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Apparently, the substrate has one (or first) set of alignment keys and the optical active component has another (or second) set of alignment keys, corresponding to the set of the alignments key on the substrate. Therefore, two sets of alignment keys are in the elected species.

Discussion of Claim Rejections under 35 USC 103

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pommer. Applicants respectfully traverse the rejections for at least the reasons set forth below.

1. In the present invention, as for example shown in FIG. 1, the substrate 11 has the first set of alignment key 17. The optical active component 20 itself has the second set of alignment key 23 too. The alignment keys are particularly used to align the optical active component 20, during the assembling process. In other words, the optical active component 20 is separated structure from the substrate before being assembled. *The present invention does not need the complex packaging process to packaging the optical active component to the substrate.*

Further, as shown in FIG 5 and recited in claims 8 and 19, the guide rods 18 protrudes from the substrate 11, so as to align the substrate 11 to an external connection object, such as the connection set 191 and the fiber connector 192.

2. In re Pommer, Pommer discloses a pair of guide rods 72 that protrudes from the mounting block 70, *but not from the substrate 17*, to align the support member 35, substrate 17,

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and optical connector 36 (see Fig. 5A; Fig. 5E; [0140]; [0141]; [0223]; [0224]; [0316])). That is to say that all the pinned elements are aligned to the mounting block 70. Pommer did not disclose that a pair of guide rods 18 protrudes from substrate 11, as recited in claim 21, so as to align the substrate 11 with respect to the fiber connector 192.

3. Further, Pommer does not disclose the alignment keys to align the source arrays with respect to the lens arrays, as recited in claim 21. In the present invention, the optical active component 20 has a first set of multiple alignment keys 23. The substrate 11 has a second set of multiple alignment keys 17 coupling to the first multiple alignment keys 23. The source arrays 22 are aligned with respect to the lens arrays 12 by the coupling of the first and the second multiple alignment keys 17, 23.

4. It should be noted that the OE die 19 is flip-chipped to the surface of the substrate (para [0273]; Fig. 16). This is a complicate packaging process. Even further, the electronic circuit 257 and the conductive trace 256 are connected to the OE device by the flip-chip bond process. Therefore, Pommer does not disclose alignment key on optical active component 22 (considered as OE by the Office Action) so as to individually align the optical active component 22 to the substrate 11, as shown in FIG. 1 of the present invention.

5. For at least the foregoing reasons, Applicants respectfully submit that independent claim 21 patently defines over the prior art references, and should be allowed. For at least the same reasons, dependent claims 22-25 patently define over the prior art references as well.

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CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 1-20 of the invention patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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